REMARKS

The following remarks are in response to the Office Action of April 10, 2003, for which a one-month extension is hereby requested. The Office Action rejected all of the pending claims, with claims 1 and 2 rejected under 35 U.S.C. 102(e) as anticipated by Jot et al., U.S. patent number 5,812,674, claims 1, 3, 11, and 45 rejected under 35 U.S.C. 102(b) as anticipated by Knibbeler, U.S. patent number 4,888,809, and claims 1-3 rejected under 35 U.S.C. 102(b) as anticipated by Schwatz, U.S. patent number 4,823,391. Claims 3 has been rewritten in independent form, claim 2 has been amended to depend on claim 3, and claim 11 has been rephrased. Claim 1 and the withdrawn claims have been cancelled and a number of new claims have been added. For the reasons given below, it is respectfully submitted that the currently pending claims are allowable over the prior art.

The Office Action rejected claims 1 and 2 under 35 U.S.C. 102(e) as anticipated by Jot et al., U.S. patent number 5,812,674. Claim 1 has now been cancelled and claim 2 has been amended to depend upon the now independent claim 3. Consequently, the basis of the Office Action's rejections under 35 U.S.C. 102(e) based on Jot et al. has now been removed and the pending claims are believed allowable Jot et al..

More generally, as the Office Action notes, "Jot et al. discloses a method of simulating the acoustical quality of a room"; that is, Jot et al. are concerned with how the environment into which speakers are placed responds to the speakers' output. This is also true of the other cited references. It is also in contrast to the present invention, which, as is described in the application's summary, is concerned with "conforming the signal processing to specific speaker characteristics and/or arrangements"(page 7, lines 4-5). The present invention is concerned with properties of the speaker's output that are not dependent upon interaction with environment into which the speakers are placed, such their compliance or alignment, whereas the prior art is concerned with properties, such as the acoustical quality of a room, related to the response of environment to the sound once it leaves the speakers. Although these two concepts are complementary and can be used in conjunction with one another, they are distinct.

Move specifically, the Office Action has rejected currently pending claims 3 and 11 under 35 U.S.C. 102(b) as anticipated by Knibbeler. As noted in the Office Action, Knibbeler discloses a system with two speaker assemblies, 8 and 9, *each having left and right transducers*. The Office Action also states that Knibbeler's signal processors use as fixed

input parameters the locations of first and second listening positions, P_1 and P_2. It is respectfully submitted that this is not correct: rather, what is used is the *acoustic signal* at the two listening positions, which is a function of acoustic environment in which the speaker assemblies are placed. More specifically, Knibbeler adjusts the front to rear balance, or fade, between the front transducers and the rear transducers and then adjusts the equalization, all in response to the acoustic signals at P_1 and P_2. (The dependence of these acoustic signals on the acoustic environment into which they are placed is made particularly clear in the discussion related to Figure 5 of that patent, where the adjustment is made to further compensate for background noise.) Also, it should be noted, that the adjustments are made for the speaker 8 and the speaker 9 each treated as a whole: specifically, Knibbeler neither teaches nor suggests any relative adjustments for the transducers in the same enclosure, such as 8L and 8R in 8, and, in particular, neither teaches nor suggests using relational characteristics of two or more speakers in the same enclosure to modify audio input signals.

These differences between the present invention and Knibbeler are reflected in the claims. Claim 3 (as now rewritten in independent form) reads:

> A method for modifying the acoustic effect of an array of two or more speakers responsive to a plurality of audio input signals from one or more signal processors, wherein each of said speakers is comprised of one or more acoustic transducers, comprising:
>
> providing one or more parameters derived from the physical relational characteristics of said speakers; and
>
> using at least one of said parameters to modify said audio input signals, wherein said two or more speakers are in the same enclosure.

Knibbeler does not provide "parameters derived from the *physical relational characteristics* of [the] speakers ... to modify said audio input signals", where the emphasis is added, but rather modifies the levels of electronic signals in response to acoustic information at listening positions that are removed and independent of the speakers. Further, these "physical relational characteristics" are of "two or more speakers are *in the same enclosure*" "responsive to a plurality of audio input signals" (emphasis added): thus the two or more speakers of the claim would correspond, for example, to speakers 8L and 8R of Knibbeler. Knibbeler neither teaches nor suggestions considering the relational characteristics of speakers in the same enclosure (or even left and right speakers outside of a common enclosure); neither does he teach or suggest altering their relative inputs. Consequently, it is respectfully submitted that a rejection of claim 3 under 35 U.S.C. 102(b) as anticipated by Knibbeler is not well founded and should be withdrawn.

Claim 11 is believed allowable for similar reasons. Claim 11, as currently amended, recites "assemblies [comprising] two or more fixed speakers mounted in a predetermined position with respect to each other, ... said speakers being responsive to a plurality of audio input signals ... derived based on fixed input parameters *determined by predetermined speaker relational characteristics*", where the emphasis is added. As described above, Knibbeler provides no teachings for providing input parameters determined by the speakers predetermined relational characteristics, such as the speakers predetermined positions relative to each other, but rather relies upon the acoustic signal at a pair of listening positions that are independent of the speakers relational characteristics. Consequently, it is also respectfully submitted that a rejection of claim 11 under 35 U.S.C. 102(b) as anticipated by Knibbeler is not well founded and should be withdrawn.

The Office Action rejected claims 2 and 3 under 35 U.S.C. 102(b) as anticipated by Schwartz. The teachings of Schwartz are all specifically directed as "adjusting the output of audio speakers to accommodate for *changes in the sound environment* for an audio playback system" (column 2, lines 5-7, emphasis added). As discussed above, this is distinct from the present invention in that it compensates for the physical environment into which the speakers are placed, rather than upon the physical relational characteristics of the speakers. (The Office Action is correct when it notes that "Microprocessor 16 processes information about the relative physical environment of the speaker", however it is respectfully submitted to be incorrect when it continues on with the parenthetical remark "including their relationship to each other".) Consequently, claims 2 and 3 are believed allowable over Schwartz for these reasons.

Additionally, the Office Action notes that Schwartz discloses "speaker assemblies 2 and 3 each having multiple transducers 5." As shown in Figures 2 and 3 of Schwartz, each of these speakers assemblies receive a *single audio input* from power amp 35, with the right speaker receiving the right channel's signal and the left speaker receiving the left channel's signal. In contrast, claim 3 recites "an array of two or more speakers *responsive to a plurality of audio input signals* from one or more signal processors, wherein each of said speakers is comprised of one or more acoustic transducers, [and] wherein said two or more speakers are in the same enclosure." As the added emphasis indicates, claims 2 and 3 require multiple audio inputs (such as, for example, both a left and a right signal) into the speakers of a single enclosure. Therefore, claims 2 and 3 are further believed allowable for these reasons and it is

respectfully submitted that a rejection of claims 2 and 3 under 35 U.S.C. 102(b) as anticipated by Schwartz is not well founded and should also be withdrawn.

A number of new claims have been added. New claims 47-52 and 53-59 respectively have claims 3 and 11 as their base claim and believed allowable for that reason. They are believed further allowable as they each recite examples of relative physical differences from which the parameters used to modify said audio input signals are derived that are not found in the prior art. New independent claim 60 is similar to claim 3 and believed allowable for the reasons given above with respect to claim 3. Claims 61-67 depend upon claim 60 and recited specific examples of physical relational characteristics.

Reconsideration of claims 2, 3 and 11, and consideration of new claims 47-67, and an early indication of their allowance are earnestly solicited.

Respectfully submitted,

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APPENDIX

Pending Claims

2.(Currently Amended) The method of claim 3, wherein said physical relational characteristics include the distances between said two or more speakers.

3.(Represented, formerly dependent) A method for modifying the acoustic effect of an array of two or more speakers responsive to a plurality of audio input signals from one or more signal processors, wherein each of said speakers is comprised of one or more acoustic transducers, comprising:

providing one or more parameters derived from the physical relational characteristics of said speakers; and

using at least one of said parameters to modify said audio input signals, wherein said two or more speakers are in the same enclosure.

(Claims 4-10 have been cancelled.)

11.(Currently Amended) A speaker system comprising two speaker assemblies, a first one of said speaker assemblies mounted in front of a listening area and a second one of said speaker assemblies mounted behind said listening area, wherein each of said assemblies comprises two or more fixed speakers mounted in a predetermined position with respect to each other, wherein each of said speakers includes one or more acoustic transducers, said speakers being responsive to a plurality of audio input signals from one or more signal processors, wherein said audio input signals are derived based on fixed input parameters determined by predetermined speaker relational characteristics.

(Claims 12-46 have been cancelled.)

47.(New) The method of claim 3, wherein said physical relational characteristics include the azimuthal alignment of said two or more speakers.

48.(New) The method of claim 3, wherein said physical relational characteristics include the sizes of said two or more speakers.

49.(New) The method of claim 3, wherein said physical relational characteristics include the relative compliance of said two or more speakers.

50.(New) The method of claim 3, wherein said physical relational characteristics include the relative compliance of the enclosure.

51.(New) The method of claim 3, wherein said physical relational characteristics include the relative frequency response exhibited by said two or more speakers.

52.(New) The method of claim 3, wherein said physical relational characteristics include the relative phase response exhibited by said two or more speakers.

53.(New) The speaker system of claim 11, wherein said fixed input parameters are determined by the distances between said speakers.

54.(New) The speaker system of claim 11, wherein said fixed input parameters are determined by the azimuthal alignment of the speakers.

55.(New) The speaker system of claim 11, wherein said audio input signals are based on the sizes of the speakers.

56.(New) The speaker system of claim 11, wherein said audio input signals are based on the relative compliance of the speakers.

57.(New) The speaker system of claim 11, wherein said audio input signals are based on the relative compliance of the speaker assemblies.

58.(New) The speaker system of claim 11, wherein said audio input signals are based on the relative phase response exhibited by the speakers.

59.(New) The speaker system of claim 11, wherein said audio input signals are based on the relative phase frequency exhibited by the speakers.

60.(New) A method for modifying the acoustic effect of an array of two or more speakers mounted in a single enclosure responsive to a plurality of audio input signals from one or more signal processors, wherein each of said speakers is comprised of one or more acoustic transducers, comprising:

providing one or more parameters derived from the relational characteristics of said speakers; and

using at least one of said parameters to modify said audio input signals.

61.(New) The method of claim 60, wherein said relational characteristics include the distances between said two or more speakers.

62.(New) The method of claim 60, wherein said physical relational characteristics include the azimuthal alignment of said two or more speakers.

63.(New) The method of claim 60, wherein said physical relational characteristics include the sizes of said two or more speakers.

64.(New) The method of claim 60, wherein said physical relational characteristics include the relative compliance of said two or more speakers.

65.(New) The method of claim 60, wherein said physical relational characteristics include the relative compliance of the enclosure.

66.(New) The method of claim 60, wherein said physical relational characteristics include the relative frequency response exhibited by said two or more speakers.

67.(New) The method of claim 60, wherein said physical relational characteristics include the relative phase response exhibited by said two or more speakers.